WHAT IS CLAIMED IS:

1   1. An on-demand service expanding system mounted to a
2 system provided with a server supplying a variety of services
3 including a connection service with a communication network, a
4 number of clients each receiving said variety of services, a
5 number of front-ends each interposed between said clients and
6 said server and executing a part of service providing function
7 involved in said server based on a demand from each of said clients,
8 and service expanding equipment containing internally a
9 communication base, comprising:
10   said on-demand service expanding system containing at least
11 one service broker residing on each communication device being
12 a component of the communication network, and at least one broker
13 controller residing on each computer for supplying a variety of
14 services;
15   said service broker being provided with a means for
16 selecting a front-end that matches with a demand of service
17 transmitted from a client and a front-end connected with said
18 client to transmit contents of the demand of service with respect
19 to the front-end; and
20   said broker controller being provided with a means for
21 controlling the front-end selected so as to connect the same with
22 said server, and a means for controlling said server connected
23 by means of the former control means, said front-end, and the
24 service broker from which said contents of the demand of service
25 was transmitted for a period of time during provision of the
26 service.

1   2. An on-demand service expanding system mounted to a

2 system provided with each front-end interposed between a server

3 for supplying a variety of services and a client by which the

4 variety of services are to be received, and a service expanding

5 system for providing services by the use of said front-end, said

6 services being implemented by an entrepreneur existing on

7 computers in a communication network composed of communication

8 devices and the computers and for providing the variety of

9 services with respect to customers by the use of said

10 communication network (hereinafter referred to simply as

11 "entrepreneur"), said front-end executing a part of functions

12 for processing data of the server on a communication device acting

13 therefor, comprising:

14   service brokers and broker controllers;

15   each service broker being provided with:

16   a means for transferring a demand for using a service

17 implemented to each front-end that corresponds to the one

18 transmitted from each client and each front-end to a pertinent

19 front-end,

20   a means for transmitting a demand for controlling the

21 front-end to said broker controller,

22   a means for administering front-end information being

23 information as to a front-end in a communication device on which

24 the service broker oneself resides and containing information

25 of an interface mounted to a front-end for connecting a client,

26 the server, and the service broker with the front-end, a name

27 of service implemented to the front-end, and information of the

28   communication device on which the front-end resides, and

29   .a means for providing an interface by which a group of said

30   respective means are used from the broker controller, the

31   front-ends, and the clients (hereinafter referred to as "service

32   broker functional interface"); and

33   said broker controller residing on a computer that supplies

34   services and being provided with:

35   a means for administering a program included on each

36   front-end or the server,

37   a means for controlling each front-end operated on each

38   communication device,

39   a means for controlling the server operated on each

40   computer,

41   a means for controlling the service broker residing on each

42   communication device;

43   a means for administering service administering

44   information, and

45   a means for providing an interface by which a group of said

46   means are used from the service brokers, the server, and the

47   entrepreneurs;

48   said service administering information containing an

49   identifier allocated by each broker controller oneself so as

50   to be alone in the broker controller oneself in order that a

51   program is discriminated by the broker controller oneself, a

52   name of service that can be realized by using programs in the

53   server and each front-end, program information being

54   information as to the programs including the server and each

55   front-end, information of an interface for connecting each

56 front-end and each broker controller oneself with the server,

57 server information involving a name of service implemented to

58 the server and being information as to the server installed by

59 each entrepreneur, information of the service broker functional

60 interface for connecting each broker controller oneself with

61 a service broker residing on each communication device,

62 information of a communication device on which each service

63 broker resides, and a system information involving an interface

64 for using a control function of each front-end provided by said

65 service expanding system and being information as to the

66 on-demand service expanding system oneself.

1   3. An on-demand service expanding system as claimed in

2 claim 2, wherein when a front-end providing a service that is

3 requested by a client to use the same does not reside on a

4 communication device in the nearest service broker with which

5 the client has been connected, said service broker transmits a

6 distribution of and a demand for starting up the front-end in

7 question to said broker controller, whereby a connecting point

8 of client with service is distributed in an on-demand manner to

9 the nearest communication device.

1   4. A service providing system of a service-contents

2 preliminary delivery type applied to the on-demand service

3 expanding system as claimed in claim 2, comprising:

4   said client, said front-end, said server, said service-

5 expanding system, and said on-demand service expanding system;

6   said server being provided with a service forecasting means

7   for extracting service contents that are forecasted to be used

8   by said client; and

9   said front-end being provided with a means for receiving

10   from the server service contents that are forecasted to be used

11   by a client and maintaining the same to provide the service

12   contents received with respect to the client in question.

1   5. A service providing system of a service-contents

2   preliminary delivery type as claimed in claim 4, comprising:

3   a means wherein the service broker transmits such a demand

4   that the server extracts service contents that are forecasted

5   to be used by a client in a parallel manner during a period of

6   time in which the client checks or establishes newly a front-end

7   to be connected with the client at the time when the client

8   connected with the service broker, and transfers the service

9   contents extracted to the front-end in question with respect

10   to the server from which a service to be received by the client

11   is supplied through the broker controller, whereby the service

12   contents that are forecasted to be used by the client have been

13   already present in the front-end in question at the time when

14   the client transmits a demand for use of service to the front-end

15   in question.

1   6. A service providing system of a service-contents

2   preliminary delivery type as claimed in claim 4 or 5, wherein:

3   said service-forecasting means involves a means for

4   maintaining an access history with respect to Web pages by a

5   client, and forecasting a service, which will be used by the

6   client from the history.

1   7. A service providing system of a service-contents

2   preliminary delivery type as claimed in claim 4 or 5, wherein:

3   said service forecasting means involves a means for selecting

4   e-mails that have been addressed to the client based on an

5   identifier delivered from said broker controller.

1   8. A method for providing services involving a

2   communication network provider, service providers, and

3   customers, comprising:

4   said communication network provider constructing and

5   operating a communication network by the use of communication

6   equipment and computers in which the on-demand service expanding

7   system as claimed in claim 2 or the service providing system of

8   a service-contents preliminary delivery type as claimed in any

9   one of claims 3 through 7 has been installed to provide a

10   connection service with the communication network operated by

11   the communication network provider oneself with respect to the

12   customers, whereby an environment making possible to provide

13   services to the customers by the use of the on-demand service

14   expanding system residing on the communication network

15   constructed by the communication network provider oneself

16   (hereinafter referred to as "service providing environment") is

17   supplied to a plurality of the service providers, so that use

18   fees for the service providing environment in response to use

19   fees for resources of the communication equipment in addition

20   to communication fees for the communication network operated by

21 the communication network provider oneself are collected from

22 the plurality of service providers; and

23   said service providers constructing servers and front-ends

24 in which services to be provided to customers have been installed

25 in the service providing environment supplied from said

26 communication network provider to distribute clients to the

27 customers thereby to provide services with respect to the

28 customers, and determining use fees of a service to be supplied

29 to the customers from the service providers themselves with

30 taking fees to be paid to the communication network provider into

31 consideration, and collecting the fees determined from each

32 customer who makes an agreement with the service providers in

33 use of services.

1   9. A storage medium, comprising:

2   a program by which the on-demand service expanding system

3 as claimed in any one of claims 1 through 3 or a service providing

4 system of a service-contents preliminary delivery type as

5 claimed in any one of claims 4 through 8 is realized as a result

6 of installing the program in computers or communication devices

7 contained in a communication network being stored in said storage

8 medium.